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14. (TWICE AMENDED) An apparatus for providing various service levels to packets sourced from a number of client devices, each of the packets having at least a part of a layer 2 header replaced with a unique bit string that is independent of contents of the packets, the apparatus comprising:

- a) a plurality of queues, each of the plurality of queues associated with a particular service level;
- b) a service level list; and
- c) a service level controller, the service level controller including
  - i) means for determining a service level to which the packet is entitled using
    - A) contents of the service level list, and
    - B) at least a portion of the unique bit string, and
  - ii) means for forwarding the packet to the one of the plurality of queues associated with the quality of service level determined.

Please add the following new claim:

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31. (NEW) The method of claim 1 wherein the step of determining whether or not the packet is entitled to access a particular service using at least a portion of the unique bit string is a separate determination from determining whether or not the packet can be forwarded.

REMARKS

In view of the foregoing amendments and the following remarks, the applicants respectfully submit that

the pending claims are not anticipated under 35 U.S.C. § 102, and are not rendered obvious under 35 U.S.C. § 103. Accordingly, it is believed that this application is in condition for allowance. If, however, the Examiner believes that there are any unresolved issues, or believes that some or all of the claims are not in condition for allowance, the applicants respectfully request that the Examiner contact the undersigned to schedule a telephone Examiner Interview before any further actions on the merits.

The applicants will now address each of the issues raised in the outstanding Office Action. Before doing so, however, the undersigned would like to thank Examiner Nguyen for courtesies extended during a telephone interview on June 3, 2002 (hereafter referred to as "the telephone interview").

**Rejections under 35 U.S.C. § 112**

Claims 1-8, 14, 16-20, 23 and 26-28 stand rejected under 35 U.S.C. § 112, ¶ 1 as containing subject matter -- namely that the unique bit string is independent of a layer 2 destination address -- not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention.

Although the law is clear that the description does not require an "*in Haec Verba*" description to support claimed subject matter, and although those skilled in the

art would necessarily imply that packet independent means are independent of a layer 2 address of a packet, the applicants has amended independent claims 1, 5 and 14 to recite, as explicitly described in the specification, that the unique bit string is independent of the contents of the packet. Accordingly, this ground of rejection should be withdrawn.

Rejections under 35 U.S.C. § 102

Claims 1, 2 and 17 stand rejected under 35 U.S.C. § 102 as being anticipated by U.S. Patent No. 6,058,429 (hereafter referred to as "the Ames patent"). The applicants respectfully request that the Examiner reconsider and withdraw this ground of rejection in view of the following.

Independent claim 1, as amended, is not anticipated by the Ames patent because the Ames patent does not teach determining whether or not a packet is entitled to access a particular service, nor does it teach making such a determination based on at least a portion of a unique bit string which replaced at least a part of a layer 2 address and which is independent of contents of the packets. Claim 1, as amended, is reprinted below with these features depicted in bold typeface:

1. (TWICE AMENDED) A method for provisioning services to packets sourced from a number of client devices, **each of the packets having at least a part of a layer 2 header replaced with a unique bit string that is independent of the contents of the**

**received packets**, the method comprising:

- a) determining whether or not the packet is entitled to access a particular service using at least a portion of the unique bit string; and
- b) if it is determined that the packet is entitled to access the particular service, then routing the packet. [Emphasis added.]

The Ames patent does not teach determining whether or not a packet is entitled to access a particular service. The Examiner argues that the Ames patent teaches a step of determining whether or not a received packet is entitled to access server 104 based on at least the unique bit string -- being the data link layer destination address of the server 104. See Paper No. 7, page 3. The Examiner is interpreting the term "entitled" unreasonably broadly to include "addressing". The ordinary meaning of entitled is to furnish with a right. See, e.g., Webster's II: New Riverside University Dictionary, p. 435. (Copy filed herewith.) The applicants did not give the term "entitled" a contrary meaning. Since a user can address a packet however they please, merely determining whether or not a packet is addressed to a particular device is not the same as determining whether or not the packet is entitled to go to the addressed device. For example, even if a properly addressed packet can be forwarded (or some other service), if it isn't entitled, it may not be forwarded (or some other service). The applicants offered the following analogies:

Address (can)

Addressed Envelope

Permission (may)

Proper postage;

Ticket to another country

Passport;

Bank Account Number

Personal ID Number (PIN)

During the telephone interview of June 3, 2002, the Examiner argued that if the packet is not properly addressed, it is not entitled to be forwarded. The applicants believe that, in the context of the present invention, checking permission and forwarding are two separate steps. For example, in Figure 19, see permission check 1912 (and 1962 and 1968) before forwarding 1926, 1932, 1934 (and 1972). The applicants have added dependent claim 31 to explicitly recite that address-based forwarding is performed separately from the entitlement determination. This is supported, for example, by Figure 19, which shows block 1912 before blocks 1926 and 1932 and blocks 1956 and 1958 before block 1962.

Therefore, claim 1, as amended, is not anticipated by the Ames patent for at least this reason. Since claims 2 and 17 depend from claim 1, they are similarly not anticipated.

More importantly, the Ames patent does not teach determining whether or not a packet is entitled to access a particular service using on at least a portion of a unique bit string which replaced at least a part of a layer 2 address and which is independent of the contents of the packet. In the previous version of claim 1, the Examiner argued that the newly added recitation was not supported by the original disclosure, and therefore did not consider a similar argument. (See Paper No. 9, page 11.) However,

since the new amendments to claim 1 are clearly supported, these features must be considered.

In view of the foregoing, the applicants respectfully submit that this ground of rejection should be withdrawn.

Claims 1-4 and 13 and 25 stand rejected under 35 U.S.C. § 102 as being anticipated by U.S. Patent No. 5,959,989 (hereafter referred to as "the Gleeson patent"). The applicants respectfully request that the Examiner reconsider and withdraw this ground of rejection in view of the following.

Independent claims 1 and 13 are not anticipated by the Gleeson patent because the Gleeson patent does not teach replacing a part of the layer 2 header with a unique bit string, nor does the Gleeson patent teach determining, using the unique bit string, whether or not a packet is entitled to a particular service. Claim 1 was already reprinted above with these features depicted in bold typeface. Claim 13 is reprinted below with the second feature depicted in bold typeface:

An apparatus for provisioning services to packets sourced from a number of client devices, each of the packets having **at least a part of a layer 2 header replaced with a unique bit string**, the apparatus comprising:  
a) an access control list; and  
b) an access controller, the access controller including  
i) **means for determining whether or not the packet is**

entitled to access a  
particular service using

A) contents of the  
access control list, and  
B) at least a portion  
of the unique bit  
string, and

ii) means for routing the  
packet if it is determined  
that the packet is entitled  
to access the particular  
service. [Emphasis added.]

The Gleeson patent does not teach replacing a part of the layer 2 header with a unique bit string. The Examiner argues that Figure 6 illustrates that the combination of MVLAN ID 612 and VLAN 620 show such a replacement. However, Figure 6, together with Figures 4A-4D of the Gleeson patent suggest that the MVLAN ID and VLAN are prepended to a packet 402a. Prepending information to a packet is not the same as replacing bits in a packet with such information.

In reply, the Examiner contends that the MAC address, VLAN field 420, start field, MAC destination address field 414, MAC source address field 416 and end field are deleted and that such deletion is equivalent to their being replaced by a multicast VLAN field 422, citing column 13, lines 62-64. (See Paper No. 9, page 13.) However, the Gleeson patent states that the multicast VLAN field 422 is attached to each frame 402b to create a multicast frame. Referring to Figure 4B, notice that the data frame 402b includes a destination address 414 and source address 416 (as well as start and end field). This supports the applicants' position, that such information is not being replaced by the VLAN field.

The applicants also note that column 8, lines 34-58 of the Gleeson patent teach replacing configuration information in tables, not in packets.

Accordingly, independent claims 1 and 13 are not anticipated by the Gleeson patent for at least this reason. Since claims 2, 3, and 4 depend from claim 1, and since claim 25 depends from claim 13, these claims are similarly not anticipated by the Gleeson patent.

Further, the applicants noted that the Gleeson patent does not teach determining, using the unique bit string, whether or not a packet is entitled to a particular service. As described above, the ordinary meaning of entitled is to furnish with a right. However, in the Gleeson patent, membership in a multicast group is effected by a simple "join group" operation. See, e.g., column 8, line 59 through column 9, line 15. Merely electing to join or leave a group is not the same as entitling one to join or leave a group.

The Examiner replies that Gleeson uses the M-VLAN ID 612 and VLAN designation 620 to determine whether or not a packet is entitled to a particular service, citing column 8, lines 34-58. (See Paper No. 9, page 13.) To reiterate, addressing is not the same as determining entitlement. The Examiner further noted that Gleeson prevents entities having a particular VLAN designation from subscribing to multicast messages to which they are not entitled, citing column 3, lines 44-55. However, this pertains to a registration process in which a device trying to receive

multicast messages registers with a router. The claim pertains to determining whether a sourced packet (not a device attempting to register) is entitled to access a particular service. Further, in the Gleeson patent security is based on the VLAN designation of the device, not the packet itself.

Accordingly, independent claims 1 and 13 are not anticipated by the Gleeson patent for at least this reason. Since claims 2, 3, and 4 depend from claim 1, and since claim 25 depends from claim 13, these claims are similarly not anticipated by the Gleeson patent.

In addition to not be anticipated by the Gleeson patent by virtue of its dependence from claim 1, independent claim 3 is not anticipated by the Gleeson patent because a multicast virtual LAN identifier does not teach a virtual private network organizational universal identifier.

#### Rejections under 35 U.S.C. § 103

Claims 5, 6, 14, 16, 18, 19, 26 and 27 stand rejected under 35 U.S.C. § 103 as being unpatentable over the Ames patent in view of U.S. Patent No. 6,104,700 (hereafter referred to as "the Haddock patent"). The applicants respectfully request that the Examiner reconsider and withdraw this ground of rejection in view of the following.

Independent claims 5 and 14, as amended, are not rendered obvious by the Ames and Haddock patents because

these patents, either taken alone or in combination, neither teach, nor suggest, determining a service level using at least a portion of a unique bit string which replaced at least a part of a layer 2 address and which is independent of the contents of the packets. Independent claims 5 and 14, as amended, are reprinted below with this feature depicted in bold typeface:

5. (TWICE AMENDED) A method for providing various quality of service levels to packets sourced from a number of client devices, **each of the packets having at least a part of a layer 2 header replaced with a unique bit string that is independent of the contents of the packets**, the method comprising:

- a) determining a service level to which the packet is entitled using at least a portion of the unique bit string; and
- b) forwarding the packet to a queue associated with the service level determined. [Emphasis added.]

14. An apparatus for providing various service levels to packets sourced from a number of client devices, **each of the packets having at least a part of a layer 2 header replaced with a unique bit string that is independent of contents of the packets**, the apparatus comprising:

- a) a plurality of queues, each of the plurality of queues associated with a particular service level;
- b) a service level list; and
- c) a service level controller, the service level controller including
  - i) means for determining a service level to which the packet is entitled using

- A) contents of the service level list, and
  - B) at least a portion of the unique bit string, and
- ii) means for forwarding the packet to the one of the plurality of queues associated with the quality of service level determined.
- [Emphasis added.]

The Ames and Haddock patents, either taken alone or in combination, neither teach, nor suggest, determining a service level using at least a portion of a unique bit string which replaced at least a part of a layer 2 address and which is independent of the contents of the packet.

The Examiner contends that (i) the Haddock patent teaches a forwarding device which determines quality of service levels based on a packet's IP (layer 3) address or its MAC (layer 2) address, (ii) the Ames patent teaches replacing at least a part of a layer 2 header with a MAC address (as a unique bit string), and (iii) it would have been obvious to use the MAC address of the Ames patent for determining a quality of service level as proposed in the Haddock patent. Even assuming, arguendo, that this is true, such teachings when combined, don't show that the unique bit string is independent of the packet contents, as recited in claims 5 and 14, as amended. Indeed, the Haddock patent relies on destination information, and the Ames patent replaces layer 2 destination information of a current device with that of a next device.

The dependent claims are similarly not rendered obvious by these patents.

Claims 5-8 and 14 stand rejected under 35 U.S.C. § 103 as being unpatentable over the Gleeson patent in view of the Haddock patent. The applicants respectfully request that the Examiner reconsider and withdraw this ground of rejection in view of the following.

Independent claims 5 and 14, as amended, are not rendered obvious by the Gleeson and Haddock patents because these patents, either taken alone or in combination, neither teach, nor suggest, determining a service level using at least a portion of a unique bit string which replaced at least a part of a layer 2 address and which is independent of the packet contents. Independent claims 5 and 14, as amended, were reprinted above with this feature depicted in bold typeface.

The Examiner contends that (i) the Gleeson patent teaches replacing part of the layer 2 header with a unique bit string, (ii) the Haddock patent teaches a forwarding device which determines quality of service levels based on a packet's IP (layer 3) address or its MAC (layer 2) address, and (iii) it would have been obvious to combine the teachings of these two patents to provide various quality of service levels.

First, as stated above, the Gleeson patent does not teach replacing a part of the layer 2 header with a unique bit string. Even assuming, arguendo, that the multicast virtual LAN ID and virtual LAN designation of the Gleeson patent could be characterized as a unique bit string that replaces at least some bits of a layer 2 header, the Haddock patent relies on layer 2 or 3

information, not multicast virtual LAN ID or virtual LAN designations to determine quality of service. Accordingly, if combined, these teachings would not provide the claimed invention.

In view of the foregoing, independent claims 5 and 14 are not rendered obvious by the Gleeson and Haddock patent. The dependent claims are similarly not rendered obvious. Regarding dependent claim 7, this claim is further distinguished over these patents because a multicast virtual LAN identifier does neither teaches, nor suggests, a virtual private network organizational universal identifier.

Claims 9-12, 15, 22, 24, 29 and 30 stand rejected under 35 U.S.C. § 103 as being unpatentable over the Gleeson patent in view of U.S. Patent No. 5,610,905 (hereafter referred to as "the Murthy patent"). The applicants respectfully request that the Examiner reconsider and withdraw this ground of rejection in view of the following.

Independent claims 9 and 15 are not rendered obvious by the Gleeson and Murthy patents because neither patent teaches determining whether or not a packet belongs to a group of packets to be copied for purposes of monitoring based on a unique bit string which has replaced at least a part of a layer 2 header. These claims are reprinted below with this feature depicted in bold typeface:

9. A method for monitoring packets sourced from a group of client devices defining a subset of client devices,

**each of the packets having at least a part of a layer 2 header replaced with a unique bit string, the method comprising:**

- a) determining whether or not the packet belongs to the group of client devices using at least a portion of at least one of the unique bit string; and
- b) if it is determined that the packet does belong to the group of client devices, then
  - i) copying the packet to generate a duplicate packet, and
  - ii) forwarding the duplicate packet to a monitoring facility. [Emphasis added.]

**15. An apparatus for monitoring packets sourced from a group of client devices defining a subset of client devices, each of the packets having at least a part of a layer 2 header replaced with a unique bit string, the apparatus comprising:**

- a) a monitoring port for accepting packets of the group of client devices to be monitored;
- b) means determining whether or not an accepted packet belongs to the group of client devices using at least a portion of the unique bit string; and
- c) means for
  - i) copying the accepted packet to generate a duplicate packet, and
  - ii) forwarding the duplicate packet to the monitoring port,

if it is determined that the packet was sourced by a client device belonging to the group of client devices.

[Emphasis added.]

Further, independent claims 9 and 15 are not rendered obvious by the Gleeson and Murthy patents because one skilled in the art would not have been motivated to combine these patents as proposed by the Examiner.

The Gleeson and Murthy patents do not teach determining whether or not a packet belongs to a group of packets to be copied for purposes of monitoring based on a unique bit string which has replaced at least a part of a layer 2 header. Presumably, the Examiner relies on the Gleeson patent for this teaching. However, as stated above, the Gleeson patent does not teach replacing a part of the layer 2 header with a unique bit string. To reiterate, Figure 6, together with Figures 4A-4D of the Gleeson patent suggest that the MVLAN ID and VLAN are prepended to a packet 402a. Prepending information to a packet is not the same as replacing bits in a packet with such information. Even assuming, arguendo, that such prepended information could be said to replace layer 2 header information, it is clearly not used for determining whether or not to copy packets for monitoring -- it is used to define virtual LANS subscribing to multicast session. Independent claims 9 and 15 are not rendered obvious by the Gleeson and Murthy patents for at least this reason. Since claims 10-12 depend from claim 9, these claims are similarly not rendered obvious by these patents.

Further, one skilled in the art would not have been motivated to combine these patents as proposed by the Examiner. More specifically, the Examiner contends that (i) the Gleeson patent teaches copying a packet to generate a duplicate packet in the case when the packet is a

multicast packet, (ii) the Murthy patent teaches a monitoring tool having a monitoring port for receiving a duplicate packet, and (iii) it would have been obvious to combine these teachings to enable monitoring. Further, the Gleeson patent teaches away from copying packets, as occurred in prior art techniques, stating:

**Although the prior art arrangement as described above is capable of delivering multicast messages to entities of diverse VLAN designations, it nonetheless has certain disadvantages. First, the arrangement requires that the same message be copied multiple times by the multicast router; one copy for each VLAN associated with the message.** In addition, each copy must be placed on the trunk line(s) linking the multicast router to the computer network. Depending on the number of VLAN designations associated with a given group multicast address, this may severely compromise the throughput of this trunk line. Multicast messaging may thus subject the network to substantial performance penalties, limiting the benefits of having established virtual local area networks. [Emphasis added.]

Column 5, lines 27-40. Therefore, independent claims 9 and 15 are not rendered obvious by the Gleeson and Murthy patents for at least this additional reason. Since claims 10-12 depend from claim 9, these claims are similarly not rendered obvious by these patents.

In view of the foregoing, the applicants respectfully request that the Examiner withdraw this ground of rejection.

New claim

New dependent claim 31 depends from claim 1 and recites that address-based forwarding is performed separately from the entitlement check. This is supported, for example, by Figure 19, block 1912 before blocks 1926 and 1932 and blocks 1956 and 1958 before block 1962.

Conclusion

In view of the foregoing amendments and remarks, the applicant respectfully submits that the pending claims are in condition for allowance. Accordingly, the applicants request that the Examiner pass this application to issue.

Respectfully submitted,

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CERTIFICATE OF MAILING under 37 C.F.R. 1.8(a)

I hereby certify that this correspondence is being deposited on **March 13, 2002** with the United States Postal Service as first class mail, with sufficient postage, in an envelope addressed to the Assistant Commissioner for Patents, Washington, D.C. 20231.

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SEPARATE SHEETS WITH MARKED-UP VERSION OF CLAIMS PER 37

C.F.R § 1.121(c)(1)(ii)

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1        1. (TWICE AMENDED) A method for provisioning \_\_\_\_\_  
2 services to packets sourced from a number of client  
3 devices, each of the packets having at least a part of a  
4 layer 2 header replaced with a unique bit string that is  
5 independent of the contents of the received packets [a  
6 layer 2 destination address], the method comprising:  
7            a) determining whether or not the packet is entitled  
8 to access a particular service using at least a  
9 portion of the unique bit string; and  
10          b) if it is determined that the packet is entitled to  
11 access the particular service, then routing the  
12 packet.

1        5. (TWICE AMENDED) A method for providing various  
2 quality of service levels to packets sourced from a number  
3 of client devices, each of the packets having at least a  
4 part of a layer 2 header replaced with a unique bit string  
5 that is independent of the <sup>payload</sup> contents of the packets [a layer  
6 2 destination address], the method comprising:  
7            a) determining a service level to which the packet is  
8 entitled using at least a portion of the unique bit  
9 string; and  
10          b) forwarding the packet to a queue associated with  
11 the service level determined.

1        14. (TWICE AMENDED) An apparatus for providing various  
2 service levels to packets sourced from a number of client  
3 devices, each of the packets having at least a part of a  
4 layer 2 header replaced with a unique bit string that is

5 independent of contents of the packets [a layer 2  
6 destination address], the apparatus comprising:  
7       a) a plurality of queues, each of the plurality of  
8       queues associated with a particular service level;  
9       b) a service level list; and  
10      c) a service level controller, the service level  
11      controller including  
12           i) means for determining a service level to  
13           which the packet is entitled using  
14               A) contents of the service level list, and  
15               B) at least a portion of the unique bit  
16               string, and  
17           ii) means for forwarding the packet to the one  
18           of the plurality of queues associated with the  
19           quality of service level determined.

1 31. (NEW) The method of claim 1 wherein the step of  
2 determining whether or not the packet is entitled to access  
3 a particular service using at least a portion of the unique  
4 bit string is a separate determination from determining  
5 whether or not the packet can be forwarded.